

**Notice of Allowability**

Application No.

09/883,734

Examiner

Marie R. Yamnitzky

Applicant(s)

THOMPSON ET AL.

Art Unit

1774

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to communications filed 10/16/03, 10/28/03, 03/05/04 and 03/15/04.
2. ☒ The allowed claim(s) is/are 92-94,98,100-104,106-112 and 135-147.
3. ☐ The drawings filed on \_\_\_\_\_ are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some\* c) ☐ None of the:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☒ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.  
(a) ☒ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached  
1) ☐ hereto or 2) ☒ to Paper No./Mail Date 14.  
(b) ☒ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.  
**Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |  |  |
|--|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892)   | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)                                  |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date <u>05132004</u> . |
| 3. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),<br>Paper No./Mail Date <u>rec'd 10/16/03, 10/28/03 and 03/05/04.</u> | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment  |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material   | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance                         |
|  | 9. <input type="checkbox"/> Other _____.   |

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Regarding the drawings: Corrected drawings are required. The corrected drawings must include the changes required by the PTO-948 attached to Paper No. 14 (Office action mailed January 15, 2003) and must include the changes set forth in the proposed drawing correction received April 18, 2003.

An examiner's amendment to the record appears on the following pages. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for the examiner's amendment to the claims was given in a telephone interview with John McGroarty on May 13, 2004. (Authorization for the examiner's amendment to pages 26, 27 and 56 of the specification was given in a telephone interview with John McGroarty and Kevin Godlewski on May 11, 2004.)

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The specification has been amended as follows:

The paragraph beginning on page 1, line 6 is replaced with the following rewritten paragraph:

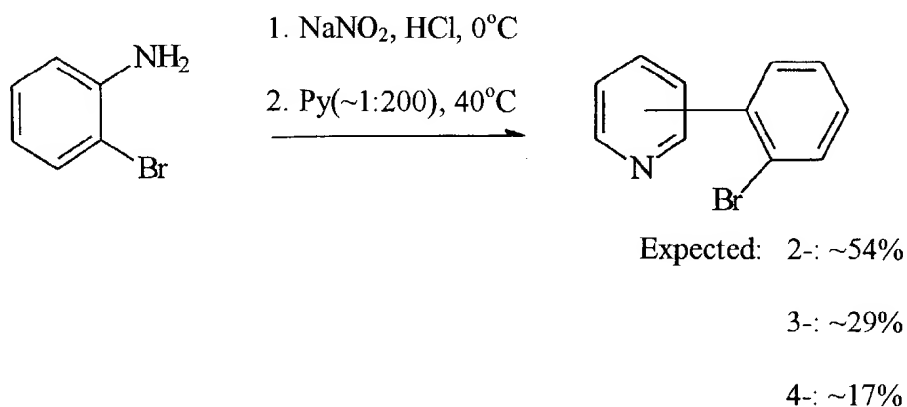
This is a continuation-in-part of Application No. 09/274,609, filed March 23, 1999, now abandoned; Application No. 09/452,346, filed December 1, 1999, now abandoned; and Application No. 09/311,126, filed May 13, 1999, now abandoned.

In the second line of the paragraph beginning on page 8, line 4 (rewritten paragraph as presented in the amendment received April 18, 2003):

“09/153,144)” has been changed to --09/153,144, now U.S. Patent No. 6,097,147)--.

Page 26, lines 18-24 have been replaced with the following in which overlaps in symbols, numbers and letters in the two lines of text over the arrow in the reaction scheme have been removed:

Scheme 4: Synthesis of n-(2'-bromophenyl)pyridines.

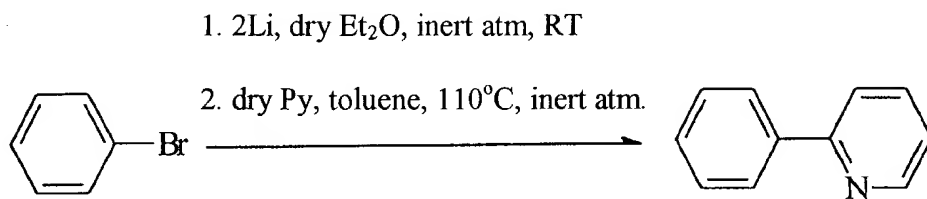


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Page 27, lines 5-9 have been replaced with the following in which overlaps in symbols, numbers and letters in the two lines of text ~~of~~ over the arrow in the reaction scheme have been removed:

Scheme 5: Synthesis of 2-phenylpyridine



Page 56, line 8: "severally" has been changed to --severely--.

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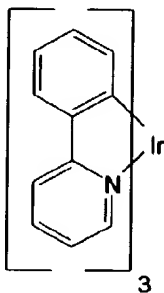
The claims have been amended as follows:

1-91. (Canceled)

92. (Previously Presented) An organic light emitting device comprising an anode, a cathode and an emissive layer, wherein the emissive layer is located between the anode and the cathode and the emissive layer comprises a phosphorescent organometallic compound, wherein the phosphorescent organometallic compound is an iridium compound including a carbon-metal bond.

93. (Currently Amended) The organic light emitting device of claim 92, wherein the iridium compound is includes a cyclometallated ~~iridium compound~~ ring having a carbon-metal bond.

94. (Previously Presented) The organic light emitting device of claim 92, wherein the iridium compound is fac-tris(2-phenylpyridine) iridium, as denoted by the formula:



95-97. (Canceled)

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98. (Currently Amended) The organic light emitting device of claim 92, wherein the phosphorescent organometallic compound is a cyclometallated compound including a cycle closed with at least one metal-X bond, wherein X is selected from the group consisting of nitrogen, sulfur, phosphorous, arsenic and oxygen, and including a cycle closed with at least one carbon-metal bond.

99. (Cancelled)

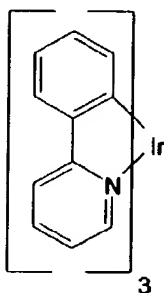
100. (Currently Amended) An organic light emitting device comprising an anode, a cathode and an emissive layer, wherein the emissive layer is located between the anode and the cathode, and the emissive layer comprises a host material and a phosphorescent organometallic compound present as a dopant in said host material, wherein the phosphorescent organometallic compound includes a carbon-metal bond and is selected from the group consisting of osmium compounds including a cyclometallated ring having a carbon-metal bond, iridium compounds and platinum compounds.

101. (Previously Presented) The organic light emitting device of claim 100, wherein the phosphorescent organometallic compound is an iridium compound.

102. (Currently Amended) The organic light emitting device of claim 101, wherein the iridium compound is includes a cyclometallated iridium compound ring having a carbon-metal bond.

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103. (Previously Presented) The organic light emitting device of claim 101, wherein the iridium compound is fac-tris(2-phenylpyridine) iridium, as denoted by the formula:



104. (Currently Amended) The organic light emitting device of claim 100, wherein the phosphorescent organometallic compound is an a cyclometallated osmium compound.

105. (Canceled)

106. (Previously Presented) The organic light emitting device of claim 100, wherein the phosphorescent organometallic compound is a platinum compound.

107. (Currently Amended) The organic light emitting device of claim 100, wherein the phosphorescent organometallic compound is a cyclometallated compound including a cycle closed with at least one metal-X bond, wherein X is selected from the group consisting of nitrogen, sulfur, phosphorous, arsenic and oxygen, and including a cycle closed with at least one carbon-metal bond.

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108. (Previously Presented) The organic light emitting device of claim 107, wherein the phosphorescent organometallic compound is a cyclometallated platinum compound.

109. (Previously Presented) The organic light emitting device of claim 100, wherein the host material is a polymeric host material.

110. (Previously Presented) The organic light emitting device of claim 109, wherein the polymeric host material is a polyvinylcarbazole.

111. (Previously Presented) The organic light emitting device of claim 100, wherein the phosphorescent organometallic compound is substituted with an electron donor group.

112. (Previously Presented) The organic light emitting device of claim 100, wherein the phosphorescent organometallic compound is substituted with an electron acceptor group.

113-134. (Canceled)

135. (Currently Amended) An organic light emitting device comprising an anode, a cathode and an emissive layer, wherein the emissive layer is located between the anode and the cathode and the emissive layer comprises a phosphorescent organometallic compound, wherein the phosphorescent organometallic compound is a cyclometallated compound including a cyclometallated ring having a carbon-metal bond.



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136. (Previously Presented) The organic light emitting device of claim 135, wherein the cyclometallated compound is a platinum compound.

137. (Previously Presented) The organic light emitting device of claim 135, wherein the cyclometallated compound further includes a cycle closed with at least one metal-X bond, wherein X is selected from the group consisting of nitrogen, sulfur, phosphorous, arsenic and oxygen.

138. (Previously Presented) The organic light emitting device of claim 137, wherein the cyclometallated compound is a platinum compound.

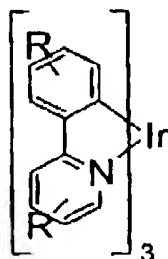
139. (Previously Presented) The organic light emitting device of claim 137, wherein X is nitrogen.

140. (Previously Presented) The organic light emitting device of claim 98, wherein X is nitrogen.

141. (Previously Presented) The organic light emitting device of claim 107, wherein X is nitrogen.

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142. (Previously Presented) The organic light emitting device of claim 92, wherein the iridium compound is denoted by the formula:

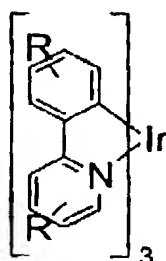


wherein R is an alkyl or aryl group.

143. (Previously Presented) The organic light emitting device of claim 142, wherein the R group is an alkyl group.

144. (Previously Presented) The organic light emitting device of claim 142, wherein the R group is an aryl group.

145. (Previously Presented) The organic light emitting device of claim 101, wherein the iridium compound is denoted by the formula:



wherein R is an alkyl or aryl group.

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146. (Previously Presented) The organic light emitting device of claim 145, wherein the R group is an alkyl group.

147. (Previously Presented) The organic light emitting device of claim 145, wherein the R group is an aryl group.

Regarding the objections and rejections set forth in the Office action mailed July 16, 2003:

The objection to the oath or declaration is withdrawn since, as noted by applicant, a supplemental declaration is not required when a claim for priority is canceled by amending the specification or by submitting a new application data sheet (MPEP 201.11 III.G.).

The provisional obviousness-type double patenting rejection over copending Application No. 09/637,766 is withdrawn since the provisional rejection is the only remaining issue and the conflicting claims have not yet been patented.

With respect to the changes made to claims 93, 98, 102, 107 and 135 by the preceding examiner's amendment, the changes do not add new matter and the changes are not necessary to distinguish over the prior art. According to the generally accepted meaning of "cyclometallated", a compound is cyclometallated if the compound includes a ring closed by at least one carbon-metal bond. These claims were amended at the request of applicant's representative.

With respect to the changes made to claims 100 and 104 (and the concurrent deletion of claim 105), the changes do not add new matter. The amendment of claim 100 setting forth a Markush group in which osmium compounds are limited to osmium compounds including a cyclometallated ring patentably distinguishes over Ma et al. (*Synthetic Metals* 94 (1998)). The compounds disclosed by Ma et al. do not include a cyclometallated ring. It is the examiner's position that the recitation "having a carbon-metal bond" that follows "cyclometallated ring" in claim 100 is superfluous since the generally accepted meaning of "cyclometallated" requires a

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ring having a carbon-metal bond, but the language "having a carbon-metal bond" was added at the request of applicant's representative.

With respect to the compounds disclosed by Ma et al., the examiner does not agree with applicant's argument set forth in the response filed March 15, 2004 that Ma's compounds would not be considered to be within the scope of the proper definition of "organometallic". Applicant's representative did not concede on this point, but agreed to limit the osmium compounds to osmium compounds including a cyclometallated ring in order to expedite allowance of the claims.

Claims 92-94, 98, 100-104, 106-112 and 135-147 are allowed. The allowed claims are renumbered as 1-29 in the following order: 92-94, 98, 140, 142-144, 100-103, 145-147, 104, 106-108, 141, 109-112 and 135-139.

The following is an examiner's statement of reasons for allowance:

The prior art does not disclose or suggest an organic light emitting device comprising an anode, a cathode and an emissive layer wherein the emissive layer comprises a phosphorescent organometallic iridium compound as required by independent claim 92, a phosphorescent cyclometallated organometallic compound as required by independent claim 135, or a phosphorescent organometallic compound in combination with a host material wherein the phosphorescent organometallic compound is selected from the Markush group set forth in independent claim 100.

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Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication should be directed to Marie R. Yamnitzky at telephone number (571) 272-1531. The examiner works a flexible schedule but can generally be reached at this number from 6:30 a.m. to 4:00 p.m. Monday, Tuesday, Thursday and Friday, and every other Wednesday from 6:30 a.m. to 3:00 p.m.

The current fax number for Art Unit 1774 is (703) 872-9306 for all official faxes. (Unofficial faxes to be sent directly to examiner Yamnitzky can be sent to (571) 273-1531.)

MRY  
May 13, 2004



**MARIE YAMNITZKY  
PRIMARY EXAMINER**

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